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April 19, 1991

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Federal Communications Commission
Office of the Secretary

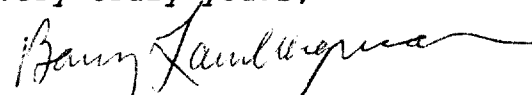
Ms. Donna R. Searcy
Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Dear Ms. Searcy:

Transmitted herewith on behalf of Harris Corporation--
Farinon Division are an original and nine copies of a Petition
for Rule Making to amend Parts 2, 21 and 94 of the Commission's
Rules to adopt a channelization plan for the 27.50-29.50 GHz
band and to make that band available for assignment under Part
94 in addition to Part 21.

Should any additional information be desired, please
communicate with this office.

Very truly yours,



Barry Lambergman
Counsel for
Harris Corporation--
Farinon Division

BL/eg
Enclosure

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

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APR 19 1991

Federal Communications Commission
Office of the Secretary

In the Matter of)
)
Amendment of Parts 2, 21 and 94)
of the Commission's Rules)
Concerning Channel Assignments)
in the 27.5-29.5 GHz Band)

RM -

7722

To: The Commission

PETITION FOR RULE MAKING

HARRIS CORPORATION --
FARINON DIVISION

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April 19, 1991

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY	i
I. INTRODUCTION	1
II. BACKGROUND	2
III. NEED FOR CHANNELIZATION PLAN AND PART 94 ALLOCATION	4
A. Channelization Plan	5
B. Part 94 Allocation	8
IV. CONCLUSION	11
APPENDIX	

SUMMARY

In this Petition for Rule Making, The Harris Corporation -- Farinon Division ("Harris") proposes to amend Parts 2, 21 and 94 of the Rules to adopt a channelization plan for the 27.50-29.50 GHz band (the "28 GHz band") and to make that band available for assignment under Part 94 in addition to Part 21.

Although the 28 GHz band has been available for point-to-point microwave operations for over 30 years (exclusively for common carrier operations for the past 18 years), there has been little, if any, use of the band for such purposes. However, Harris has identified substantial developing needs for products for the 28 GHz band. For example, the 28 GHz band could be used to facilitate the implementation of personal communications services through the interconnection of microcells. In order to enable Harris and other microwave equipment manufacturers to respond to this demand, the rule changes described in this Petition are necessary. In the absence of a channelization plan, it is difficult for manufacturers to design and put equipment on the market because of uncertainty as to channel pairings, bandwidths, channel spacings, etc. This, in turn, makes it difficult for users to plan to use the band because of uncertainty as to the availability and cost of equipment.

A Part 94 allocation is justified at this time because circumstances over the past 18 years have changed sufficiently to warrant reexamination of the Commission's 1973 decision that

the 28 GHz band should be available for common carrier use only. First, to the best of Harris' knowledge, sharing between Fixed Satellite Service and microwave services, both common carrier and private, has been successful in other parts of the spectrum such as the 18 GHz band. Second, since 1973, the Commission has generally moved away from an allocation scheme based on separate common carrier and private radio bands and has increasingly employed a shared allocation approach. Third, the lower OFS bands are indeed heavily used today and there is a need for private system use of this spectrum. Fourth, inasmuch as the Commission may license some PCS systems on a private carrier basis, the same need for short haul microwave links to connect microcells may exist in the OFS as is contemplated on the common carrier side. Finally, as experience with the 10.55-10.68 GHz, 17.7-19.7 GHz, and 21.2-23.6 GHz bands has shown, broad eligibility rules under both Parts 21 and 94 will result in greater and more efficient use of the 28 GHz band.

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APR 19 1991

Federal Communications Commission
Office of the Secretary

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of)
)
Amendment of Parts 2, 21 and 94) RM - _____
of the Commission's Rules)
Concerning Channel Assignments)
in the 27.5-29.5 GHz Band)

To: The Commission

PETITION FOR RULE MAKING

The Harris Corporation -- Farinon Division ("Harris"), by its attorneys, hereby petitions the Commission, pursuant to Section 1.401 of the Commission's Rules, to amend Parts 2, 21 and 94 of the Rules to adopt a channelization plan for the 27.50-29.50 GHz band (the "28 GHz band") and to make that band available for assignment under Part 94 in addition to Part 21. In support whereof, the following is shown.

I. INTRODUCTION

Harris is a Florida corporation with its headquarters located in Melbourne, Florida. Through its Farinon Division, located in San Carlos, California, Harris designs, develops and manufactures microwave and multiplex systems used by licensees in the terrestrial fixed microwave services.

As a leading manufacturer of equipment used in the terrestrial fixed microwave services, Harris is interested in advancing the state-of-the art in microwave technology and in facilitating maximization of use of those frequency bands allocated to the terrestrial fixed services. By manufacturing

equipment that can be used in less developed and unused frequency bands allocated to the terrestrial fixed microwave services, Harris can help create new opportunities for expansion of microwave services. It is in this vein that Harris submits the proposal described in this petition.

II. BACKGROUND

The 28 GHz band is allocated to the Fixed, Mobile and Fixed-Satellite (Earth-to-space) Services on a co-primary basis in the United States.^{1/} Only the Fixed Service (common carrier) and Fixed-Satellite Service ("FSS") allocations have been implemented in the Commission's Rules.^{2/} While Section

^{1/} See 47 C.F.R. §2.106.

^{2/} See 47 C.F.R. §§ 21.701(a) & 25.202(a)(1). The Commission recently noted that the 28 GHz band was made available for point-to-point use in 1959. Memorandum Opinion and Order, Hye Crest Management, Inc., FCC 91-6, released January 18, 1991, at n. 13 ("Hye Crest Order"). See also Report and Order, Docket No. 19547, 39 F.C.C.2d 959, 967 (1973)(reallocating the 28 GHz band from the Fixed and Mobile Service generally (i.e., both private and common carrier use) to exclusively common carrier).

The 28 GHz band was allocated to the FSS by the 1971 Space WARC. See Notice of Proposed Rule Making, Space WARC, Amendment of Part 2, Docket No. 19547, 37 Fed. Reg. 15714, 15717 (para. 19) (August 4, 1972). Although the Table of Allocations in Rule Section 2.106 does not reflect the FSS allocation as having been implemented, Section 25.202(a)(1) lists the 27.5-29.5 GHz band as available for assignment in the FSS. Harris notes that the Second Notice of Inquiry in Gen. Dkt. No. 89-554, 5 FCC Rcd 6046, 6067 (1990), discusses the possibility of allocating spectrum in the 27-31 GHz range for HDTV Broadcast-Satellite Service feeder links. Similarly, Motorola Satellite Communications, Inc. has proposed to use the 27.5-30.0 MHz band for fixed

21.701(a) lists the 27.5-29.5 GHz band as available for assignment in the common carrier Point-to-Point Microwave Radio Service, it does not provide a channelization plan for that band. Section 21.703 merely states that the maximum authorized bandwidth for this band is 220 MHz.^{3/}

Although the 28 GHz band has been available for point-to-point microwave operations for over 30 years (exclusively for common carrier operations for the past 18 years), there has been little, if any, use of the band for such purposes to the best of Harris' knowledge.^{4/} This lack of use is primarily attributable to propagation limitations, the lack of equipment, and the fact that frequencies in the lower point-to-point microwave bands have generally been available. Over time, however, the lower

gateway/control satellite uplinks for its proposed IRIDIUM system (File Nos. 9-DSS-P-91(87) & CSS-91-010, Public Notice dated April 1, 1991, Report No. DS-1068). These proposed FSS uses do not pose any reason for not going forward with the rulemaking proceeding requested herein since the transmissions would be in the Earth-to-space direction.

^{3/} The maximum authorized bandwidth for the 28 GHz band was increased from 200 MHz to 220 MHz in the Second Report and Order in Docket No. 18920, 47 F.C.C.2d 737, 744 (1974). The Commission stated that it took this action to "enable equipment similar to that envisioned for 18 GHz to be developed for the higher band." However, the 18 GHz band has since been channelized, offering a variety of bandwidths. See First Report and Order, Gen. Dkt. No. 82-334, 54 R.R.2d 1001, 1011 (1983). To the best of Harris' knowledge, there is no equipment available in the market for operation in the 28 GHz band with 220 MHz bandwidth.

^{4/} In the Hye Crest Order (n. 13), the Commission observed that since the 28 GHz band was made available for point-to-point use in 1959, little use of the band has been made.

bands are becoming increasingly used and some of them are congested.^{5/} The increasing use of the microwave spectrum has been and will continue to be driven by many factors including the explosive growth of cellular telecommunications with the attendant need to connect large numbers of base station transmitters (cell sites) to each other and to switching equipment.

III. NEED FOR CHANNELIZATION PLAN AND PART 94 ALLOCATION

Harris maintains frequent contact with both its common carrier and private microwave customers so that it can remain attuned to developing needs in the microwave radio market. Through these contacts, Harris has identified substantial developing needs for products for the 28 GHz band.^{6/} In order to enable Harris and other microwave equipment manufacturers to respond to this demand, certain rule changes are necessary. Thus, for the reasons explained below, the Commission should adopt a channelization plan for the 28 GHz band and make

^{5/} Pacific Bell observed in its Comments (p. 2) in the Hye Crest proceeding that "the common carrier band at 18 GHz is already saturated in some areas, and in fact congestion exists even at 23 GHz in major metropolitan areas. These frequencies are being used, not only for common carrier video pick-up and digital point-to-point, but also to carry basic exchange telephone service."

^{6/} It should also be noted, for example, that Pacific Bell stated in its comments in the Hye Crest proceeding that "[a]s soon as equipment capable of operating in the 27.5-29.5 GHz band is available, this spectrum will be utilized by common carriers."

frequencies in that band available for assignment under Part 94.

A. Channelization Plan

Experience with the 18 GHz band shows that a detailed channelization plan coupled with technical standards relevant to that band and broad eligibility rules are necessary for the development of a new band. Thus, in order to develop the 28 GHz band, a channelization plan must be adopted.

With the anticipated widespread implementation of personal communications services, there will be a growing need for microwave services to interconnect a multitude of microcells both to each other, to switches, and to the public switched telephone network. The short path lengths that are characteristic of the higher microwave bands such as the 28 GHz band will be particularly well-suited for connecting microcells because there will be large numbers of such cells in relatively close proximity to each other.

The need to start exploiting the 28 GHz band for point-to-point use in the near future has been recognized by the industry. For example, carriers which filed comments in opposition to Hye Crest's proposal to construct and operate a network of omni-directional microwave transmitters in the 28 GHz band for purposes of distributing video service to apartments, hotels and private homes in New York City pointed to that

need.^{7/} The Bell Atlantic Telephone Companies observed that "there is every reason to believe that the demand for additional point-to-point frequencies -- including the 27.5 to 29.5 GHz band -- will develop in the near future." Southwestern Bell Telephone Company (p.3) noted that "[i]f additional demands are made for common carrier point-to-point microwave service, it is certainly conceivable that SWBT will be applying to the Commission for assignment of portions of the [28 GHz] frequency band" Pacific Bell (p. 2) stated that the 28 GHz band "is indeed essential to the continued growth of basic telephone and other common carrier services." Finally, the National Spectrum Managers Association (p. 4) noted that "[w]hile the 27.5-29.5 GHz band is not yet used for any regular service, increasing frequency congestion in the lower bands will result in this band's increasing importance to accommodate the steady growth in point-to-point services." In order to be in a position to start implementing point-to-point operations in the 28 GHz band, Harris believes the Commission should promptly initiate a proceeding to establish a channelization plan for this band. In the absence of a channelization plan, it is difficult for manufacturers to design and put equipment on the market because of uncertainty as to channel pairings, bandwidths, channel spacings, etc. This, in turn, makes it

^{7/} See supra note 2, Hye Crest Order.

difficult for users to plan to use the band because of uncertainty as to the availability and cost of equipment.

Thus, the adoption of a channelization plan for the 28 GHz band will serve the public interest by making feasible the development of equipment for this band, thereby putting to use spectrum which up to now has essentially remained fallow. As noted above, for example, the 28 GHz band could be used to facilitate the implementation of personal communications services through the interconnection of microcells. In addition, Harris strongly believes that the adoption of a channelization plan providing for multiple bandwidth options, including relatively narrow bandwidths, would spawn new applications for the 28 GHz band. Moreover, a channelization plan would ensure that channel assignments are consistent with the Commission's goal of maximizing spectrum efficiency.

Harris, therefore, urges the Commission to adopt the channelization plan set forth in the attached Appendix. Based on its experience with products for the 17.7-19.7 GHz band, Harris believes that the particular channel bandwidths proposed herein are sufficiently flexible to accommodate all types of transmission needs because the proposed bandwidths are consistent with those adopted for the 17.7-19.7 GHz band.^{8/} Moreover, commonality of bandwidth options, modulation

^{8/} See supra note 3.

techniques and transmission bit rates^{9/} between the 18 and 28 GHz bands would enhance user options and encourage spectrally efficient system designs.^{10/}

B. Part 94 Allocation

Harris also believes it is timely and urges the Commission to amend its Rules so the Fixed allocation for the 28 GHz band can be fully implemented by making frequencies in the 28 GHz band available to users in the Operational-Fixed Microwave Radio Service ("OFS") in addition to the common carrier Point-to-Point Microwave Service.

The Commission decided in 1973 that the 28 GHz band should be available for common carrier use only^{11/} because it believed that common carriers had demonstrated a greater need for additional spectrum than private users^{12/} and that limiting

^{9/} The proposed channelization plan would permit use of digital hierarchies ranging from 6.3 Mb/s to over 155 Mb/s.

^{10/} See also supra note 3.

^{11/} See supra note 2.

^{12/} The Commission noted at that time that UTC, which was advocating shared OFS use of the band,

has not shown any particular needs for this range of the radio spectrum as yet nor can such a showing be made at this time because lower bands allocated for operational fixed use are not yet saturated. On the contrary, common carrier bands at 4, 6 and 11 GHz are rapidly becoming saturated.

fixed use of the band to common carrier operations would facilitate implementation of Space WARC-71's allocation of the 28 GHz band to the FSS (Earth-to-space) on a shared co-primary basis with the Fixed and Mobile Services in Region 2.^{13/}

In Harris' view, circumstances over the past 18 years have changed sufficiently to warrant reexamination of that decision by the Commission. First of all, to the best of Harris' knowledge, sharing between FSS and microwave services, both common carrier and private, has been successful in other parts of the spectrum such as the 18 GHz band. Thus, there is no reason to believe sharing between FSS and OFS would not be feasible in the 28 GHz band.

F.C.C.2d at 966.

^{13/} As the Commission explained in the Notice of Proposed Rule Making:

Attention is invited particularly to the proposals herein with respect to the bands 17.7-19.7 and 27.5-29.5 GHz. In the existing table, they are shown as available to the fixed and mobile services generally. That is, for both private and common carrier use. The existing rule Parts 81, 87, 89, 91 and 93 (i.e., Safety and Special Radio Services) limit them to developmental status. Part 21, the common carrier rules, does not so limit their use. The bands are virtually unused today except for a limited number of experimental licenses held by common carriers. Since these bands will now be shared with the fixed-satellite service, we propose that only common carriers be permitted to operate in the fixed and mobile services.

37 Fed. Reg. 15714, 15717 (para. 20) (August 4, 1972).

Second, since 1973, the Commission has generally moved away from an allocation scheme based on separate common carrier and private radio bands and has increasingly employed a shared allocation approach.^{14/} Thus, sharing the 28 GHz band between common carrier and private microwave services would be consistent with this approach.

Third, the lower OFS bands are indeed heavily used today and there is a need for private system use of this spectrum. Fourth, inasmuch as the Commission may license some PCS systems on a private carrier basis,^{15/} the same need for short haul microwave links to connect microcells may exist in the OFS as is contemplated on the common carrier side.

Finally, inasmuch as the 28 GHz band remains underutilized, Part 94 eligibility for the 28 GHz band will serve the public interest by promoting maximization of use of the band. Indeed, as experience with the 10.55-10.68 GHz, 17.7-19.7 GHz, and 21.2-23.6 GHz bands has shown, broad eligibility rules under both

^{14/} See, e.g., Second Report and Order, 54 R.R.2d 1091, 1094-95 (1983) (adopting shared common carrier/private radio allocation in the 10.6 and 18 GHz bands for DEMS/DTS and noting that "different radio services should be authorized in common frequency bands based on the similarity of the radio facilities employed and their electromagnetic compatibility.") The 21.2-23.6 GHz, 31-31.3 GHz and 38.6-40 GHz bands are similarly shared by the common carrier and private services.

^{15/} See Amendment of the Commission's Rule to Establish New Personal Communications Services, Notice of Inquiry, Gen. Dkt. No. 90-314, 5 FCC Rcd 3995, 3999 (para. 28) (1990).


Parts 21 and 94 will result in greater and more efficient use of the 28 GHz band, particularly when coupled with the type of channelization plan proposed herein.

IV. CONCLUSION

WHEREFORE, the foregoing premises considered, Harris respectfully requests that the Commission institute a rule making proceeding, pursuant to Section 1.401 of the Commission's Rules, to amend Parts 2, 21 and 94, as set forth in the Appendix hereto, to to adopt a channelization plan for the 28 GHz band and to make that band available for assignment under Part 94 in addition to Part 21.

Respectfully submitted,

HARRIS CORPORATION --
FARINON DIVISION

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